OIPE

RAW SEQUENCE LISTING .   DATE: 12/05/2001
PATENT APPLICATION: US/09/870,122   TIME: 10:25:07

Input Set : A:\PCT-US99-28826 Sequence listing txt.txt   ENTERED
Output Set: N:\CRF3\11212001\I870122.raw

```
       4 <110> APPLICANT: Regents of the University of Minnesota et al.
       6 <120> TITLE OF INVENTION: Streptococcal C5a peptidase vaccine
       8 <130> FILE REFERENCE: 600.450WO1
C-->  10 <140> CURRENT APPLICATION NUMBER: US/09/870,122
C-->  10 <141> CURRENT FILING DATE: 2001-05-30
      10 <150> PRIOR APPLICATION NUMBER: US 09/206,898
      11 <151> PRIOR FILING DATE: 1998-12-07
      13 <150> PRIOR APPLICATION NUMBER: US 08/589,756
      14 <151> PRIOR FILING DATE: 1996-01-22
      16 <160> NUMBER OF SEQ ID NOS: 23
      18 <170> SOFTWARE: FastSEQ for Windows Version 3.0
      20 <210> SEQ ID NO: 1
      21 <211> LENGTH: 1164
      22 <212> TYPE: PRT
      23 <213> ORGANISM: Streptococcus pyogenes
      25 <400> SEQUENCE: 1
      26     Leu Arg Lys Lys Gln Lys Leu Pro Phe Asp Lys Leu Ala Ile Ala Leu
      27     1               5                   10                  15
      28     Met Ser Thr Ser Ile Leu Leu Asn Ala Gln Ser Asp Ile Lys Ala Asn
      29                 20                  25                  30
      30     Thr Val Thr Glu Asp Thr Pro Ala Thr Glu Gln Ala Val Glu Thr Pro
      31                 35                  40                  45
      32     Gln Pro Thr Thr Val Ser Glu Glu Val Pro Ser Ser Lys Glu Thr Lys
      33             50                  55                  60
      34     Thr Pro Gln Thr Pro Asp Asp Ala Glu Glu Thr Val Ala Asp Asp Ala
      35     65                  70                  75                  80
      36     Asn Asp Leu Ala Pro Gln Ala Pro Ala Lys Thr Pro Asp Thr Ser Ala
      37                 85                  90                  95
      38     Thr Ser Lys Ala Thr Ile Arg Asp Leu Asn Asp Pro Ser Gln Val Lys
      39                 100                 105                 110
      40     Thr Leu Gln Glu Lys Ala Gly Lys Gly Ala Gly Thr Val Val Ala Val
      41                 115                 120                 125
      42     Ile Asp Ala Gly Phe Asp Lys Asn His Glu Ala Trp Arg Leu Thr Asp
      43                 130                 135                 140
      44     Lys Ala Lys Ala Arg Tyr Gln Ser Lys Glu Asp Leu Glu Lys Ala Lys
      45     145                 150                 155                 160
      46     Lys Glu His Gly Ile Thr Tyr Gly Glu Trp Val Asn Asp Lys Val Ala
      47                 165                 170                 175
      48     Tyr Tyr His Asp Tyr Ser Lys Asp Gly Lys Thr Ala Val Asp Gln Glu
      49                 180                 185                 190
      50     His Gly Thr His Val Ser Gly Ile Leu Ser Gly Asn Ala Pro Ser Glu
      51                 195                 200                 205
      52     Thr Lys Glu Pro Tyr Arg Leu Glu Gly Ala Met Pro Glu Ala Gln Leu
      53             210                 215                 220
      54     Leu Leu Met Arg Val Glu Ile Val Asn Gly Leu Ala Asp Tyr Ala Arg
      55     225                 230                 235                 240
      56     Asn Tyr Ala Gln Ala Ile Arg Asp Ala Val Asn Leu Gly Ala Lys Val
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/870,122

DATE: 12/05/2001
TIME: 10:25:07

Input Set : A:\PCT-US99-28826 Sequence listing.txt.txt
Output Set: N:\CRF3\11212001\I870122.raw

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 57                   245                   250                   255
 58    Ile Asn Met Ser Phe Gly Asn Ala Ala Leu Ala Tyr Ala Asn Leu Pro
 59             260                   265                   270
 60    Asp Glu Thr Lys Lys Pro Phe Val Tyr Ala Lys Ser Lys Gly Val Arg
 61             275                   280                   285
 62    Ile Val Thr Thr Ala Gly Asn Asp Ser Ser Phe Gly Gly Lys Thr Arg
 63             290                   295                   300
 64    Leu Pro Leu Ala Asp His Pro Asp Tyr Gly Val Val Gly Thr Pro Ala
 65    305                   310                   315                   320
 66    Ala Ala Asp Ser Thr Leu Thr Val Ala Ser Tyr Ser Pro Asp Asn Gln
 67             325                   330                   335
 68    Leu Thr Glu Thr Ala Met Val Lys Thr Asp Asp Gln Gln Asp Lys Glu
 69             340                   345                   350
 70    Met Pro Val Leu Ser Thr Asn Arg Phe Glu Pro Asn Lys Ala Tyr Asp
 71             355                   360                   365
 72    Tyr Ala Tyr Ala Asn Arg Gly Met Lys Glu Asp Asp Phe Lys Asp Val
 73             370                   375                   380
 74    Lys Gly Lys Ile Ala Leu Ile Glu Arg Ser Asp Ile Asp Phe Thr Asp
 75    385                   390                   395                   400
 76    Lys Ile Ala Asn Ala Lys Lys Ala Gly Ala Val Gly Val Leu Ile Tyr
 77             405                   410                   415
 78    Asp Asn Gln Asp Lys Gly Phe Pro Ile Glu Leu Pro Asn Val Asp Gln
 79             420                   425                   430
 80    Met Pro Ala Ala Phe Ile Ser Arg Lys Asp Gly Leu Leu Leu Lys Asp
 81             435                   440                   445
 82    Asn Ser Gln Lys Thr Ile Thr Phe Asn Ala Thr Pro Lys Val Leu Pro
 83             450                   455                   460
 84    Thr Ala Ser Gly Thr Lys Leu Ser Arg Phe Ser Ser Trp Gly Leu Thr
 85    465                   470                   475                   480
 86    Ala Asp Gly Asn Ile Lys Pro Asp Ile Ala Ala Pro Gly Gln Asp Ile
 87             485                   490                   495
 88    Leu Ser Ser Ala Ala Asn Asn Lys Tyr Ala Lys Leu Ser Gly Thr Ser
 89             500                   505                   510
 90    Met Ser Ala Pro Leu Val Ala Val Ile Met Gly Leu Leu Gln Lys Gln
 91             515                   520                   525
 92    Tyr Glu Thr Gln Tyr Pro Asp Met Thr Gln Ser Glu Arg Leu Asp Leu
 93             530                   535                   540
 94    Ala Lys Lys Val Leu Met Ser Ser Ala Thr Ala Leu Tyr Asp Glu Asp
 95    545                   550                   555                   560
 96    Glu Lys Ala Tyr Phe Ser Pro Arg Gln Gln Gly Ala Gly Ala Val Asp
 97             565                   570                   575
 98    Ala Lys Lys Ala Ser Glu Ala Thr Met Tyr Val Thr Asp Lys Asp Asn
 99             580                   585                   590
100    Thr Ser Ser Lys Val His Leu Asn Asn Val Ser Asp Lys Phe Glu Val
101             595                   600                   605
102    Thr Val Thr Val His Asn Lys Ser Asp Lys Pro His Glu Leu Tyr Tyr
103             610                   615                   620
104    Gln Ala Thr Val Gln Thr Asp Lys Val Asp Gly Lys His Phe Ala Leu
105    625                   630                   635                   640
```

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                RAW SEQUENCE LISTING              DATE: 12/05/2001
                PATENT APPLICATION:  US/09/870,122    TIME: 10:25:07

                Input Set : A:\PCT-US99-28826 Sequence listing.txt.txt
                Output Set: N:\CRF3\11212001\I870122.raw

106     Ala Pro Lys Ala Leu Ile Glu Thr Ser Trp Gln Lys Ile Thr Ile Pro
107                     645                 650                 655
108     Ala Asn Ser Ser Lys Gln Val Thr Ile Pro Ile Asp Ile Ser Gln Phe
109                     660                 665                 670
110     Ser Lys Asp Leu Leu Ala Gln Met Lys Asn Gly Tyr Phe Leu Glu Gly
111                     675                 680                 685
112     Phe Val Arg Ile Lys Gln Asp Pro Thr Lys Glu Glu Leu Met Ser Ile
113             690                 695                 700
114     Pro Tyr Ile Gly Phe Arg Gly Asp Phe Gly Asn Leu Ser Ala Leu Glu
115     705                 710                 715                 720
116     Lys Pro Leu Tyr Asp Ser Lys Asp Gly Ser Ser Tyr Tyr His Glu Glu
117                     725                 730                 735
118     Ile Ser Asp Ala Lys Asp Gln Leu Asp Gly Asp Gly Leu Gln Phe Tyr
119                     740                 745                 750
120     Ala Leu Lys Asn Asp Phe Thr Ala Leu Thr Thr Glu Ser Asn Pro Trp
121             755                 760                 765
122     Thr Ile Ile Asn Val Val Lys Glu Gly Val Glu Asn Ile Glu Asp Ile
123             770                 775                 780
124     Glu Ser Ser Glu Ile Thr Glu Thr Ile Phe Ala Gly Thr Phe Ala Lys
125     785                 790                 795                 800
126     Gln Asp Asp Asp Arg His Tyr Tyr Ile His Arg His Ala Asn Gly Lys
127                     805                 810                 815
128     Pro Tyr Ala Ala Ile Ser Pro Asn Gly Asp Gly Asn Arg Asp Tyr Val
129                     820                 825                 830
130     Gln Phe His Gly Thr Phe Leu Arg Asn Ala Lys Asn Leu Val Ala Glu
131             835                 840                 845
132     Val Leu Asp Lys Glu Gly Asn Val Val Trp Thr Ser Glu Val Thr Glu
133             850                 855                 860
134     Gln Val Val Lys Asn Tyr Asn Asn Asp Leu Ala Ser Thr Leu Gly Ser
135     865                 870                 875                 880
136     Thr Arg Phe Glu Ile Ser Arg Trp Asp Gly Lys Asp Lys Asp Ala Lys
137                     885                 890                 895
138     Val Val Ala Asn Gly Thr Tyr Thr Tyr Arg Val Arg Tyr Thr Pro Ile
139                     900                 905                 910
140     Ser Ser Gly Ala Lys Glu Gln His Thr Asp Phe Asp Val Ile Val Asp
141             915                 920                 925
142     Asn Thr Thr Pro Glu Val Ala Thr Ser Ala Thr Phe Ser Thr Glu Asp
143             930                 935                 940
144     Arg Arg Leu Thr Leu Ala Ser Lys Pro Gln Thr Ser Gln Pro Val Tyr
145     945                 950                 955                 960
146     Arg Glu Arg Ile Ala Tyr Thr Tyr Met Asp Glu Asp Leu Pro Thr Thr
147                     965                 970                 975
148     Glu Tyr Ile Ser Pro Asn Glu Asp Gly Thr Phe Thr Leu Pro Glu Glu
149                     980                 985                 990
150     Ala Glu Thr Met Glu Gly Ala Thr Val Pro Leu Lys Met Ser Asp Phe
151             995                 1000                1005
152     Thr Tyr Val Val Glu Asp Met Ala Gly Asn Ile Thr Tyr Thr Pro Val
153             1010                1015                1020
154     Thr Lys Leu Leu Glu Gly His Ser Asn Lys Pro Glu Gln Asp Gly Ser
```

```
155    1025                1030                1035                1040
156    Asp Gln Ala Pro Asp Lys Lys Pro Glu Thr Lys Pro Glu Gln Asp Gly
157                    1045                1050                1055
158    Ser Asp Gln Ala Pro Asp Lys Lys Pro Glu Thr Lys Pro Gly Gln Asp
159                1060                1065                1070
160    Gly Ser Gly Gln Thr Pro Asp Lys Lys Pro Glu Thr Lys Pro Glu Lys
161            1075                1080                1085
162    Asp Ser Ser Gly Gln Thr Pro Gly Lys Thr Pro Gln Lys Gly Gln Pro
163        1090                1095                1100
164    Ser Arg Thr Leu Glu Lys Arg Ser Ser Lys Arg Ala Leu Ala Thr Lys
165    1105                1110                1115                1120
166    Ala Ser Thr Arg Asp Gln Leu Pro Thr Thr Asn Asp Lys Asp Thr Asn
167                1125                1130                1135
168    Arg Leu His Leu Leu Lys Leu Val Met Thr Thr Phe Phe Leu Gly Leu
169                1140                1145                1150
170    Val Ala His Ile Phe Lys Thr Lys Arg Thr Glu Asp
171            1155                1160
173 <210> SEQ ID NO: 2
174 <211> LENGTH: 1167
175 <212> TYPE: PRT
176 <213> ORGANISM: Streptococcus pyogenes
178 <400> SEQUENCE: 2
179    Leu Arg Lys Lys Gln Lys Leu Pro Phe Asp Lys Leu Ala Ile Ala Leu
180    1               5               10              15
181    Met Ser Thr Ser Ile Leu Leu Asn Ala Gln Ser Asp Ile Lys Ala Asn
182                20              25              30
183    Thr Val Thr Glu Asp Thr Pro Val Thr Glu Gln Ala Val Glu Thr Pro
184                35              40              45
185    Gln Pro Thr Ala Val Ser Glu Glu Val Pro Ser Ser Lys Glu Thr Lys
186        50              55              60
187    Thr Pro Gln Thr Pro Asp Asp Ala Glu Glu Thr Ile Ala Asp Asp Ala
188    65              70              75              80
189    Asn Asp Leu Ala Pro Gln Ala Pro Ala Lys Thr Ala Asp Thr Pro Ala
190                85              90              95
191    Thr Ser Lys Ala Thr Ile Arg Asp Leu Asn Asp Pro Ser Gln Val Lys
192                100             105             110
193    Thr Leu Gln Glu Lys Ala Gly Lys Gly Ala Gly Thr Val Val Ala Val
194            115             120             125
195    Ile Asp Ala Gly Phe Asp Lys Asn His Glu Ala Trp Arg Leu Thr Asp
196        130             135             140
197    Lys Thr Lys Ala Arg Tyr Gln Ser Lys Glu Asp Leu Glu Lys Ala Lys
198    145             150             155             160
199    Lys Glu His Gly Ile Thr Tyr Gly Glu Trp Val Asn Asp Lys Val Ala
200                165             170             175
201    Tyr Tyr His Asp Tyr Ser Lys Asp Gly Lys Thr Ala Val Asp Gln Glu
202                180             185             190
203    His Gly Thr His Val Ser Gly Ile Leu Ser Gly Asn Ala Pro Ser Glu
204            195             200             205
205    Thr Lys Glu Pro Tyr Arg Leu Glu Gly Ala Met Pro Glu Ala Gln Leu
```

RAW SEQUENCE LISTING   DATE: 12/05/2001
PATENT APPLICATION: US/09/870,122   TIME: 10:25:07

Input Set : A:\PCT-US99-28826 Sequence listing.txt.txt
Output Set: N:\CRF3\11212001\I870122.raw

```
206        210                  215                  220
207    Leu Leu Met Arg Val Glu Ile Val Asn Gly Leu Ala Asp Tyr Ala Arg
208    225                  230                  235                  240
209    Asn Tyr Ala Gln Ala Ile Arg Asp Ala Val Asn Leu Gly Ala Lys Val
210                  245                  250                  255
211    Ile Asn Met Ser Phe Gly Asn Ala Ala Leu Ala Tyr Ala Asn Leu Pro
212                  260                  265                  270
213    Asp Glu Thr Lys Lys Ala Phe Asp Tyr Ala Lys Ser Lys Gly Val Ser
214                  275                  280                  285
215    Ile Val Thr Ser Ala Gly Asn Asp Ser Ser Phe Gly Gly Lys Thr Arg
216                  290                  295                  300
217    Leu Pro Leu Ala Asp His Pro Asp Tyr Gly Val Val Gly Thr Pro Ala
218    305                  310                  315                  320
219    Ala Ala Asp Ser Thr Leu Thr Val Ala Ser Tyr Ser Pro Asp Lys Gln
220                  325                  330                  335
221    Leu Thr Glu Thr Ala Met Val Lys Thr Asp Asp Gln Gln Asp Lys Glu
222                  340                  345                  350
223    Met Pro Val Leu Ser Thr Asn Arg Phe Glu Pro Asn Lys Ala Tyr Asp
224                  355                  360                  365
225    Tyr Ala Tyr Ala Asn Arg Gly Met Lys Glu Asp Asp Phe Lys Asp Val
226    370                  375                  380
227    Lys Gly Lys Ile Ala Leu Ile Glu Arg Gly Asp Ile Asp Phe Lys Asp
228    385                  390                  395                  400
229    Lys Val Ala Asn Ala Lys Lys Ala Gly Ala Val Gly Val Leu Ile Tyr
230                  405                  410                  415
231    Asp Asn Gln Asp Lys Gly Phe Pro Ile Glu Leu Pro Asn Val Asp Gln
232                  420                  425                  430
233    Met Pro Ala Ala Phe Ile Ser Arg Lys Asp Gly Leu Leu Leu Lys Asp
234                  435                  440                  445
235    Asn Pro Gln Lys Thr Ile Thr Phe Asn Ala Thr Pro Lys Val Leu Pro
236    450                  455                  460
237    Thr Ala Ser Gly Thr Lys Leu Ser Arg Phe Ser Ser Trp Gly Leu Thr
238    465                  470                  475                  480
239    Ala Asp Gly Asn Ile Lys Pro Asp Ile Ala Ala Pro Gly Gln Asp Ile
240                  485                  490                  495
241    Leu Ser Ser Val Ala Asn Asn Lys Tyr Ala Lys Leu Ser Gly Thr Ser
242                  500                  505                  510
243    Met Ser Ala Pro Leu Val Ala Gly Ile Met Gly Leu Leu Gln Lys Gln
244                  515                  520                  525
245    Tyr Glu Thr Gln Tyr Pro Asp Met Thr Pro Ser Glu Arg Leu Asp Leu
246    530                  535                  540
247    Ala Lys Lys Val Leu Met Ser Ser Ala Thr Ala Leu Tyr Asp Glu Asp
248    545                  550                  555                  560
249    Glu Lys Ala Tyr Phe Ser Pro Arg Gln Gln Gly Ala Gly Ala Val Asp
250                  565                  570                  575
251    Ala Lys Lys Ala Ser Ala Ala Thr Met Tyr Val Thr Asp Lys Asp Asn
252                  580                  585                  590
253    Thr Ser Ser Lys Val His Leu Asn Asn Val Ser Asp Lys Phe Glu Val
254                  595                  600                  605
```

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/870,122

DATE: 12/05/2001
TIME: 10:25:08

Input Set : **A:\PCT-US99-28826 Sequence listing.txt.txt**
Output Set: **N:\CRF3\11212001\I870122.raw**

L:10 M:270 C: Current Application Number differs, Replaced Current Application No
L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date